

The facts contained in this paper appear to me to be an additional reason for uniting together the Storks and Herons more closely than was done by Garrod; and the classification adopted by Mr. Slater in the most recent edition of the 'List of Animals,' so far as this is concerned, expresses the facts. But it might be advisable to separate *Scopus* as the type of a family Scopidæ, equivalent to both the Ardeidæ and the Ciconiidæ, and to place it between them as an indication that it forms a connecting link. It is not impossible that *Balaniceps* should also be included in this family.

4. Note on the Presence of an Anterior Abdominal Vein in *Echidna*. By F. E. BEDDARD, M.A., F.R.S.E., Prosecutor to the Society.

[Received November 11, 1884.]

Although several excellent memoirs upon the various systems and organs of *Echidna* have from time to time appeared, there remain a considerable number of details of the structure of this most interesting mammal that require investigation. The death of the female specimen lately living in the Society's Menagerie has given me the opportunity not only of preserving certain parts for histological examination, but also of studying the anatomy of the animal in a fresh condition. In this way I have been able to make out a structural point which I believe has not been yet recorded, and which appears to me to be of some interest—that is, the presence of an *anterior abdominal* or persistent *allantoic* vein.

In the excellent account given by Prof. Balfour, in his 'Comparative Embryology,' of the development of the venous system in Vertebrata, I find the following statement:—"The venous system<sup>1</sup> of mammals differs in two important points from that of Reptilia and Amphibia. . . . The anterior abdominal vein is only a foetal vessel forming during foetal life, the allantoic vein." With regard to its subsequent history in Mammalia, Prof. Balfour says<sup>2</sup>:—"The allantoic (anterior abdominal) veins are originally paired. They are developed very early, and at first course along the still widely open somatic walls of the body, and fall into the single vitelline trunk in front. The right allantoic vein disappears before long, and the common trunk formed by the junction of the vitelline and allantoic veins becomes considerably elongated. This trunk is soon enveloped by the liver . . . At the close of foetal life the allantoic vein becomes obliterated up to its place of entrance into the liver . . . Owing to the allantoic (anterior abdominal) vein having merely a foetal existence, an anastomosis between the iliac veins and the portal system by means of the anterior abdominal vein is not established."

In the Reptilia and Amphibia, on the other hand, the anterior abdominal veins are represented in the adult condition as well as during foetal life.

In the Amphibia, as in the Mammalia, there are at first two abdo-

<sup>1</sup> Comparative Embryology, vol. ii. p. 541.

<sup>2</sup> *Ibid.* p. 546.

minal veins which unite behind into a single trunk after receiving branches from the allantoic bladder, and two branches (epigastric veins) from the iliac veins; anteriorly the right vein atrophies, and the left is distributed to the liver.

† In the Saurians there are also primitively two allantoic veins. "They unite with two epigastric veins (homologous with those in Amphibia), which connect them with the system of the posterior cardinal veins. The left of the two eventually atrophies, so that there is formed an unpaired allantoic vein. This vein at first receives the vena cava inferior close to the heart, but eventually the junction of the two takes place in the region of the liver, and finally the anterior abdominal vein (as it comes to be after the atrophy of the allantois) forms the portal system and breaks up into capillaries in the liver." In the Crocodiles and Chelonians both anterior abdominal veins appear to persist. I have quoted these passages from Balfour because they express clearly, and at the same time briefly, the relations of the anterior abdominal vessels in the adult as well as the foetus of the various groups of Vertebrata, and may serve for comparison with the following account of what appears to me to be a similar structure in *Echidna*. On opening the body-wall of *Echidna* I at once noticed the presence of a large vein running along the ventral wall of the body in very close connexion with it; posteriorly this vessel (which was very conspicuous from being full of blood, and was no mere fibrous ligament) arises from a vascular network upon the under surface of the bladder. Anteriorly the vein passes down from the body-wall and is distributed to the left half of the liver. I am not able to state with certainty whether there is any connexion with the veins of the limbs, but am inclined to believe that there is not.

There seems to me to be no doubt that this blood-vessel really corresponds to the anterior abdominal vein of the lower Vertebrata and to the allantoic vein of the mammalian foetus; its occurrence in *Echidna* is another fact among many which show that the Monotremata have preserved more of the ancestral characters than any other family of the Mammalia.

5. On five new or little-known Species of East-African Birds, represented in Mr. H. H. Johnston's First Collection from the Kilimanjaro District. By Captain G. E. SHELLEY, F.Z.S.

[Received November 5, 1884.]

(Plate LI.)

Mr. Johnston's first collection of 94 skins having been placed in my hands by the Kilimanjaro Committee of the British Association, I have considered it advisable, not only to describe at once three species which I consider new, but also two others which are well represented in the present valuable collection, and have been